

## ABSTRACT

Apparatus for transporting a fluid, atomizers, reactors, integrated fuel processing apparatus, combinations thereof, methods of atomizing reactants, methods of moving fluids, methods of reverse-flow in a reactor, and combinations thereof, are provided. One exemplary apparatus for transporting a fluid, among others, includes: a channel for receiving a fluid; a sensor for determining an internal condition of the fluid in the channel; and a channel actuator in communication with the sensor for changing a cross-sectional area of the channel based on the internal condition, wherein the change in cross-sectional area controls a parameter selected from a pressure and a fluid flow.